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**WO9833939A1: METHOD FOR DETERMINING NUCLEIC ACID BASE SEQUENCE AND APPARATUS THEREFOR**

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**Abstract:** A method for determining a DNA base sequence which comprises fixing in an extended state a molecule of a single-stranded sample DNA (7) carrying a bead (5) at one end thereof and a magnetic bead (6) at the other end within the visual field of a fluorescence microscope by means of a magnetic force (11) and a laser trap (3); binding a primer (8) thereto; effecting an extension reaction (10) with a polymerase to thereby cause the incorporation of a single chemically modified nucleotide (9) alone labeled with a fluorescent substance differing from base species to base species; measuring exclusively the fluorescent substance thus incorporated as a fluorescent microscopic image by the evanescent irradiation (13) with an excitation laser (1); determining the base species from the fluorescent substance; liberating the fluorescent substance with which the incorporated nucleotide has been labeled by the evanescent irradiation (13) with an ultraviolet laser (2); and then effecting the step of the incorporation of the next nucleotide followed by repeating these steps. Thus, the base sequence can be determined by using a single DNA molecule, and a DNA consisting of several hundred bases or more can be efficiently sequenced.  
[\[Show "fr" Abstract\]](#)

**Attorney, Agent or Firms:** OGAWA, Katsuo;

**Foreign References:** none

(No patents reference this one)

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(54)発明の名称 核酸塩基配列決定法及び核酸塩基配列決定装置

(57) Abstract

A method for determining a DNA base sequence which comprises finding in an extended state a molecule of a single-stranded sample DNA (7) carrying a bead (5) at one end thereof and a magnetic bead (6) at the other end within the visual field of a fluorescence microscope by means of a magnetic force (11) and a laser trap (3); binding a primer (8) thereto; effecting an extension reaction (10) with a polymerase to thereby cause the incorporation of a single chemically modified nucleotide (9) alone labeled with a fluorescent substance differing from base species to base species; measuring exclusively the fluorescent substance thus incorporated as a fluorescent micromagnetic image by the evanescent irradiation (13) with an excitation laser (1); determining the base species from the fluorescent substance; liberating the fluorescent substance with which the incorporated nucleotide has been labeled by the evanescent irradiation (13) with an ultraviolet laser (2); and then effecting the step of the incorporation of the next nucleotide followed by repeating these steps. Thus, the base sequence can be

